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Remedial Investigation Work Plan

13 November 2013

Prepared for

BNSF Railway Company
800 North Last Chance Gulch, Suite 101
Helena, Montana, 59601

K/J Project No. 1349206.00

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Section 1: Introduction

Kennedy/Jenks Consultants has prepared this Remedial Investigation (RI) Work Plan (Work Plan) for the BNSF Railway Company (BNSF), Operable Unit 6 (OU6) at the Libby Asbestos Site (Site) in Libby, Montana. This Work Plan is being completed at the request of the United States Environmental Protection Agency (USEPA) as outlined in the *Request for Additional Removal Action Pursuant to Administrative Order on Consent for Removal Action (Administrative Order)*, CERCLA Docket No. CERCLA-08-2003-004, Libby Asbestos Site, Libby, Montana SSID #08-BC (Request) and dated 25 September 2013. The requirements for this Work Plan were provided in the *Statement of Work (SOW) for Additional Work- Remedial Investigation Report* which was attached to the Request.

The Additional Work for this Site includes the development of an RI Report for OU6 at the Site. As presented in this Work Plan, the RI Report will be developed in accordance with the SOW and the requirements of the Administrative Order, and consistent with the National Contingency Plan (40 CFR 300) and, as applicable, *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (OSWER Directive 9355.3-01, October 1988).

1.1 Purpose of the RI Work Plan

The purpose of this Work Plan is to describe the tasks to be completed and schedule to be followed to produce the RI Report for OU6. The RI Report will describe the results of investigations completed to date. BNSF understands that, based on current conditions, the USEPA is not requiring any additional RI site work and has not identified any data gaps. Preparation of draft human health risk calculations will be completed independent of the RI Report and submitted under separate cover.

1.2 Assemble Existing Information

Existing information will be reviewed and summarized in order to determine which data are relevant to the RI Report. Information to be reviewed includes the following, as available:

- Environmental sampling and analysis plans
- Maps, photographs, and environmental data
- Data summary reports, data evaluations or interpretations
- Information concerning potential asbestos concerns within BNSF-owned buildings within the Site
- Information regarding source of ballast used along the rail corridor
- Information regarding current land use, reasonably anticipated land use, and any land use restrictions

- Past material management and disposal practices
- Past removal actions at the railyard.

A description of existing data summary reports and other documents, such as removal action reports will be presented in the RI Report for OU6.

1.3 Project Team

This effort is led by staff of the USEPA Region 8 including Ms. Dania Zinner, Remedial Project Manager; Ms. Rebecca Thomas, Team Leader for the Libby Asbestos Superfund Site; and Ms. Lorraine Ross, EPA Enforcement Attorney. The primary BNSF Environmental staff consists of Mr. Dave Smith, Manager Environmental Remediation; Ms. Brooke Kuhl, General Attorney; and Mr. Dan McCaskill, Manager Industrial Hygiene. BNSF's risk assessment efforts will be completed by Ms. Laura Trozzolo, Senior Risk Assessor, for TRC. The RI Report will be developed, on behalf of BNSF, by Kennedy/Jenks Consultants. Mr. Scott Carney has been assigned the Project Manager for Kennedy/Jenks Consultants.

Section 2: Site Characterization

The RI Report will include a site characterization section that describes the nature and extent of impact within OU6. Investigations dating back to 2001 will be included. Provided below is a brief description of the Site, its physical setting, plan for presenting past investigation data, and development of the conceptual site model.

2.1 Site Background

Libby is located in northwestern Montana and supported a large open pit vermiculite mine from the 1920s through 1990. Much of the ore produced by the mine, located approximately 7 miles northeast of Libby, was transported by BNSF predecessor railroads from a loadout across the Kootenai River from the screening plant to either a processing plant located in Libby or to plants located throughout the country. Libby Amphibole (LA) may have impacted the current BNSF right-of-way (ROW) through spillage of vermiculite during rail transit (CDM 2008).

Railroad tracks were originally constructed through the area in the late 1800s by the Great Northern Railway Company (GN), a predecessor railroad of the BNSF. The current BNSF tracks follow the original GN alignment for the majority of the route through OU6. The primary exception is the track that parallels the Fisher River to the Flathead Tunnel, which was laid in the 1970s in preparation for the construction of the Libby dam.

2.2 Physical Setting

OU6 consists of approximately 40 miles of BNSF ROW that traverse the Libby Asbestos Superfund Site. In railroad terms, OU6 extends approximately from Milepost (MP) 1302 to MP 1341 of BNSF's Kootenai River Subdivision. The BNSF ROW generally follows the courses of the Fisher and Kootenai rivers through OU6 and passes through the towns of Libby and Troy, Montana. The towns of Libby and Troy, Montana lie at elevations of 2,580 feet above mean sea level (AMSL) and 1,888 feet MSL, respectively. Both towns are within Lincoln County in the northwestern corner of Montana.

Figure 1 shows the extent of OU6 and the proximity to geographic features.

2.3 Past Investigations

Sampling efforts in OU6 began in 2001 and focused on characterization of impacts in and around the Libby, Montana railyard. Removal actions occurred in the BNSF Libby railyard in 2004 and 2005. Sampling efforts after remedial actions have primarily focused on receptor exposure during railroad maintenance activities. The largest of these efforts was an Activity Based Sampling (ABS) event, which occurred in late 2008 in cooperation with the EPA. In addition, BNSF has taken the initiative to conduct additional sampling events to evaluate ambient air quality associated with railroad maintenance events within OU6.

The RI Report will discuss the investigation and removal action history for OU6 and divide the history into two sections: pre-2005 (prior to Libby railyard removal action) and post-2005 (post

removal action). Previous investigation results will be used to describe the nature and extent of impacts, as well as the fate and transport of LA within the OU6.

2.4 Conceptual Site Model

The primary source of risk for the Libby Asbestos Superfund Site, including OU6, is human exposure to asbestos fibers through the inhalation pathway. The USEPA developed a conceptual site model (CSM) illustrating the various release and transport mechanisms, potentially contaminated media and potential receptors (CDM 2008). The USEPA CSM was revised by ENSR during the development of the Worker and Public Receptor Sampling and Analysis Plans in 2008 (ENSR 2008a, 2008b) to include separate exposure scenarios for railroad maintenance and public receptors. The ENSR-revised CSMs provide a more concise view of the most probable exposure pathways in OU6.

Both ENSR-revised CSMs list the mine (OU3) as the primary source; vermiculite or vermiculite concentration products as secondary sources; and impacted soil along the ROW as a tertiary source. The first and second release mechanisms for both worker and public exposure scenarios are bulk transport and spillage along railroad property, respectively. It should be noted that neither of these release mechanisms are active since BNSF no longer transports commodities originating from the mine site. Active release mechanisms for both worker and public scenarios consist of potential airborne release from rail maintenance activities, airborne release from trespasser activities, and airborne release due to air turbulence from passing trains. The primary media of concern is ambient air near the ROW. Two public human health receptors, consisting of on-looker trespassers and pedestrian trespassers were identified in the ENSR CSM. Potential worker human health receptors were identified and consist of general laborers and machine operators. The inhalation exposure route was common between all human health receptors.

The attached CSMs may be revised by the USEPA when included in the Libby site-wide risk assessment. BNSF anticipates that it would have the opportunity to review and comment on any revisions to the OU6 CSM.

The worker and public receptor CSMs are included in Appendix A.

2.5 Risk Calculations for Human Health Risk Assessment

Draft OU6 human health risk calculations will be performed by TRC and submitted under separate cover. The risk calculations will then be incorporated into the site-wide human health risk assessment and used to determine if additional measures are needed to protect human health. The draft risk calculations will be prepared in accordance with the USEPA Request and using the draft inhalation unit risk (IUR) and reference concentration (RfC) values for LA asbestos.

The draft human health risk calculations will be performed on air data collected from human receptors during the 2008 ABS event that was completed in cooperation with the USEPA. These data were selected because they were collected for the sole purpose of calculating risk to human health (and not for health and safety purposes). The ABS data set consists of 14 worker (general laborer and work operating machinery) and 21 public (on-looker trespasser and

pedestrian trespasser) receptor samples. OU6 will not be divided into multiple exposure areas as the ABS data are representative of entire OU.

An evaluation of data quality and representativeness, including a data adequacy evaluation, was performed on the reanalysis data set by CDM as described in the OU6 Outdoor ABS Supplemental TEM Analysis Recommendations (CDM 2013). However, additional evaluation of the spatial and temporal representativeness and compliance with the data quality objectives will be examined during the risk assessment.

Although there were no detectable asbestos fibers in any of the ABS air samples and USEPA's 2008 "Framework for Investigating Asbestos-Contaminated Superfund Sites" (USEPA 2008) states that "when computing the mean (EPC) of a set of asbestos measurements, samples that are 'non-detect' should be evaluated using a value of zero, not ½ the analytical sensitivity." A range of estimated Exposure Point Concentrations (EPCs) (best estimate of the mean, mean achieved sensitivity, and estimate upper bound using CB-UCL) will be determined following USEPA guidance offered in the Section 4.1 of the USEPA Request: "A tabular summary of EPCs shall be provided using the four OU6 ABS exposure datasets stratified by group: on-looker trespasser, pedestrian trespassers, general laborers, and worker operating machinery."

Exposure assumptions used to derive the analytical requirements for the supplemental TEM analysis, and described in Section 4.1 of the USEPA Request, will be utilized in the draft human health risk calculations for the Reasonable Maximum Exposure (RME) scenario. In addition, a set of Central Tendency Exposure (CTE) scenario exposure assumptions will be provided in the risk assessment. As mentioned above, the draft risk calculations for OU6 are based on a 100 percent non-detect dataset, which may overestimate actual human health risk.

2.6 Remedial Investigation Report

A draft RI Report will be prepared and submitted to USEPA and the State of Montana for review and approval, in accordance with the Administrative Order. The RI Report will summarize results of field activities to characterize OU6, the sources of potential impacts, the nature and extent of impacts, and the fate and transport of LA. The RI Report will include a summary of the following:

- Physical characteristics of OU6
- Source characteristics
- Nature and extent of impact
- Fate and transport.

The RI Report will summarize available information on LA impacts in OU6. The RI, combined with the risk assessment results, will be used within the CERCLA framework to identify areas that may require further actions to protect human health and the environment.

The format of the RI Report will follow the template presented in Appendix B of the SOW, and the *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (OSWER Directive 9355.3-01, October 1988), as applicable.

Section 3: Schedule

The RI Report will be completed according to the following schedule as specified in the Request:

| SOW Reference | Document or Activity | Delivery Date |
|----------------------|--------------------------------------|---|
| Section 3.2 | RI Report Work Plan | 30 days after receipt of Additional Work letter |
| Section 4.1 | Draft Human Health Risk Calculations | Monday, 18 November 2013 |
| Section 4.2 | Draft RI Report | Monday, 2 December 2013 |
| Section 4.2 | Draft Final RI Report | Tuesday, 31 December 2013 |
| Section 4.2 | Final RI Report | Friday, 31 January 2014 |

The Draft Human Health Risk Calculations will be developed independent from the RI Report and will be submitted under separate cover.

References

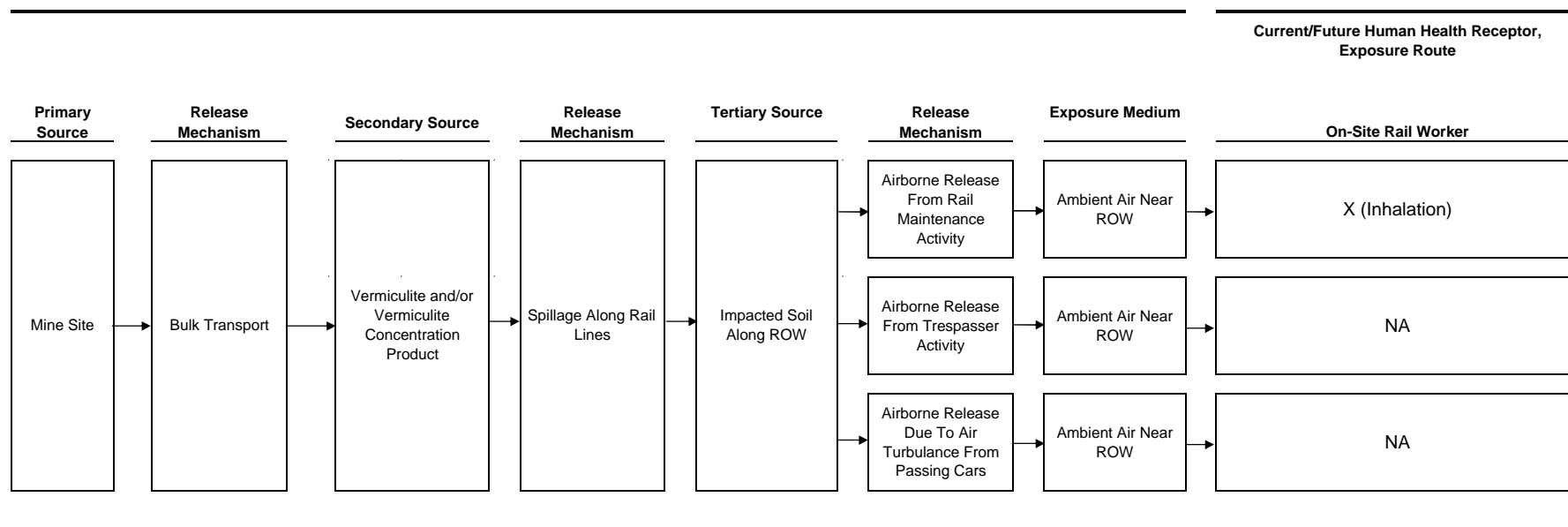
- CDM. 2008. *Draft Final Data Gap Analysis for Potential Contaminated Media, Railyards and Railways, Operable Unit 6*. Denver, Colorado.
- CDM Smith. 2013. *OU6 Outdoor ABS Supplemental TEM Analysis Recommendations. Memorandum*. Denver, Colorado.
- ENSR. 2008a. *Rail Maintenance Public Receptor Activity-Based Sampling and Analysis Plan*. Fort Collins, Colorado.
- ENSR. 2008b. *Rail Maintenance Worker Receptor Activity-Based Sampling and Analysis Plan*. Fort Collins, Colorado.
- USEPA. 2008. *Framework for Investigating Asbestos-Contaminated Superfund Sites*. Prepared by the Asbestos Committee of the Technical Review Workgroup of the Office of Solid Waste and Emergency Response. OSWER Directive #9200.0-68.

Figure

Appendix A

Worker and Public Receptor Conceptual Site Models

Figure 1-2 Refined Conceptual Site Model For Worker Receptors
 Rail Maintenance Worker Receptor Activity-Based Sampling and Analysis Plan
 Operable Unit 6, Libby, Montana Superfund Site, October, 2008

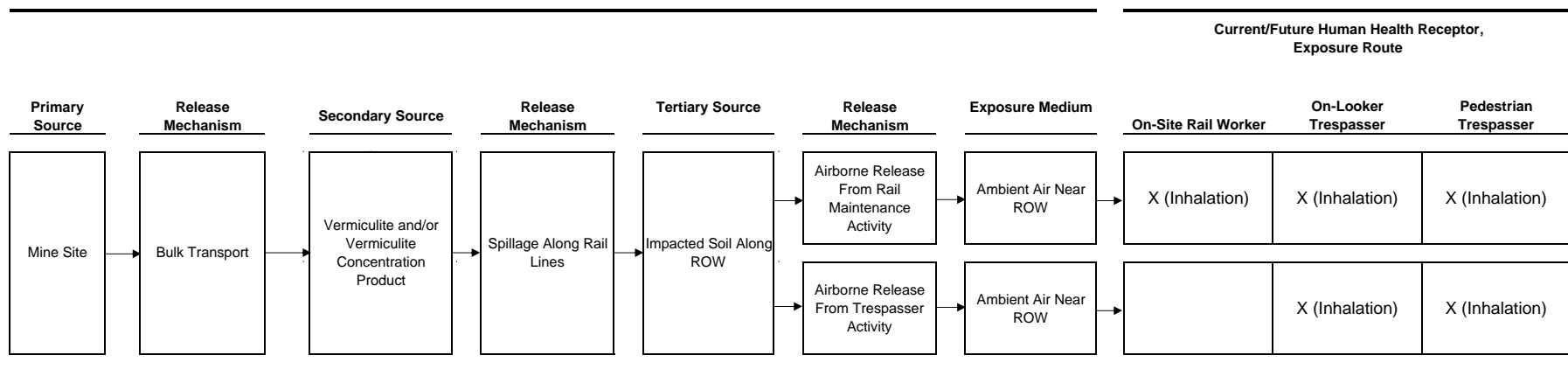


Legend:

X Potentially Complete and Significant Exposure Pathway - to be quantitatively evaluated in the risk assessment

ROW = BNSF Right of Way

Figure 3-1 Refined Conceptual Site Model
Rail Maintenance Activity-Based Sampling and Analysis Plan
Operable Unit 6, Libby, Montana Superfund Site, September 10, 2008



Legend:

X Potentially Complete and Significant Exposure Pathway - to be quantitatively evaluated in the risk assessment

ROW = BNSF Right of Way